

REMARKS

Claims 1-4, 7-8, 11-14 and 16-25 are pending.

Claims 1-4, 7-8, 11-14 and 16-25 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Molitor et al. (DE 195 44 451) in view of Lee (US 4,866,110) and De Zen (WO 98/01275). Applicants respectfully traverse this rejection.

Lee describes a molded product, which is an admixture containing among other ingredients 50 to 60% polypropylene, 30 to 35% of wood flour, 2 to 3% of leather powder and 1.7 to 2.3% of chopped glass fibers. The leather powder may be a waste product from finishing leather, containing gelatin and collagen (see column 4, lines 23 to 30), and the glass fibers may also be a waste material (see column 5, lines 23 to 26).

There are four major differences between the teaching of Lee and the present invention:

- First, the molded product of Lee is in the form of a **thin plate** (column 1, lines 13 to 16), whereas the core layer of the present invention is a **foam**,
- Second, the leather powder and glass fibers of Lee are separate waste materials from external, unrelated industrial processes, whereas the waste material of the present invention is an internal recycled material from a previously made sandwich panel.
- Third, Lee does not give the particle size of the leather powder and the glass fibers, but it must be far below 5 mm, which is the lower limit of the particles of the present invention, which have an intact foam structure (see page 2, lines 10 to 13).

- Fourth, the waste materials of Lee are mixed with a polypropylene **resin** (column 3, line 1), whereas the recycle particles of the present invention are mixed with polypropylene **foam** particles.

Since Lee's molded product and its components are far remote from the presently claimed sandwich panel and its recycle particles, one of ordinary skill in the art would not have been motivated to combine Lee with Molitor. In any event, even the combined teaching of Lee and Molitor would not have led to the present invention.

De Zen describes composite products made by mixing thermoplastic binder particles and waste particles, melting the thermoplastic particles so that they coat the waste particles, and compression molding the coated waste particles to a dense, compacted composite product (US 6,253,537 column 2, lines 8 to 23). The waste particles may be reground thermoplastic material or fly ash, kiln dust, peanut shells, rice or corn husks (column 3, lines 1 to 5 and 10 to 15). The thermoplastic binder may be recycled PVC or polyethylene (column 3, lines 33 to 35). the particle size of the thermoplastic binder and the waste material may be up to 10 mm. The amount of the particulate waste material is preferably 40 to 60% (column 3, lines 50 to 53) resp. 30 to 50% (column 6, lines 20 to 23).

There are again numerous differences between the teaching of De Zen and the present invention:

- First, the composite product of De Zen is a dense, **compacted product**, whereas the core layer of the present invention is a **foam**.

- Second, the waste particles of De Zen are waste materials from external, unrelated processes, whereas the waste material of the present invention is an internal recycled material from a previously made sandwich panel.
- Third, the waste material of De Zen is in the form of compact particles, whereas the recycle particles of the present invention have an intact foam structure.
- Fourth, the waste material of De Zen is mixed with PVC or polyethylene particles, whereas the recycle particles of the present invention are mixed with polypropylene foam particles.
- Fifth, the waste material of De Zen is mixed in a relatively high proportion with the thermoplastic binder material, whereas according to the present invention, the core layer contains only 1 to 10% of the recycle particles.

Again, the composite product of De Zen and its components are far remote from the sandwich panel and its recycle particles of the present invention.

Applicants again point out that it was surprising that the new sandwich panels of the present invention have only insignificantly inferior mechanical properties, compared with the virgin panels. It would have been expected that the glass fibers of the recycle particles would damage the bond between the individual foam particles during the manufacture of the core layer by welding together the foam particles. Such unexpected results evidence the nonobviousness of the present invention.

In summary, Molitor fails to teach a core layer comprising from 1 to 10% of recycle particles and the secondary references are remote from the present invention and fail to disclose using internal recycled material from a previously made sandwich



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panel. Furthermore, none of the references discloses a recycle panel which has been comminuted but not melted (specification page 2, lines 10-13) such that the core layer remains substantially intact, as presently claimed. Therefore, applicants urge that the aforementioned rejection should be withdrawn.

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Respectfully submitted,  
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